

INTERNATIONAL SEARCH REPORT

International Application No
PCT 03/11639

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01M8/22 H01M8/12 H01M4/86

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>KIM H ET AL: "CU-NI CERMET ANODES FOR DIRECT OXIDATION OF METHANE IN SOLID-OXIDE FUEL CELLS"</p> <p>JOURNAL OF THE ELECTROCHEMICAL SOCIETY, ELECTROCHEMICAL SOCIETY. MANCHESTER, NEW HAMPSHIRE, US,</p> <p>vol. 149, no. 3,</p> <p>29 January 2002 (2002-01-29), pages A247-A250, XP001157413</p> <p>ISSN: 0013-4651</p> <p>cited in the application</p> <p>* see p. A247, right col. *</p> <p>the whole document</p> <p style="text-align: center;">---</p> <p style="text-align: center;">-/--</p>	1-32

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

5 February 2004

Date of mailing of the international search report

16/02/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Stellmach, J

INTERNATIONAL SEARCH REPORT

International Application No

PCT 03/11639

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>GORTE, R.J. ET AL.: "Anodes for direct Oxidation of dry hydrocarbon in a Solid-Oxide Fuel Cell"</p> <p>ADV.MATERIALS, vol. 12, no. 19, 2 October 2000 (2000-10-02), pages 1465-1469, XP001153929</p> <p>WEINHEIM cited in the application * see p.1469, left col. lines 5-15 * the whole document</p>	1-32
Y	<p>WO 00 52780 A (VOHS JOHN M ; CRACIUN RADU (US); GAS RES INST (US); GORTE RAYMOND J) 8 September 2000 (2000-09-08) cited in the application * see p.4, l.13-26; p.9, l.3-7 ; claims 15-19 * the whole document</p>	1-32
Y	<p>MURRAY, E.P. ET AL.: "A direct methanol fuel cell with a ceria-based anode"</p> <p>NATURE, vol. 400, 12 August 1999 (1999-08-12), pages 649-651, XP002249450 * see p.651 * the whole document</p>	1-32
Y	<p>LIVERMORE S J A ET AL: "Fuel reforming and electrical performance studies in intermediate temperature ceria-gadolinia-based SOFCs"</p> <p>JOURNAL OF POWER SOURCES, ELSEVIER SEQUOIA S.A. LAUSANNE, CH, vol. 86, no. 1-2, March 2000 (2000-03), pages 411-416, XP004194152 ISSN: 0378-7753 cited in the application * see p.415, right col., summary *</p>	1-32
Y	<p>PARK, S. ET AL.: "Direct Oxidation of Hydrocarbons in a Solid Oxide Fuel Cell. I. Methane Oxidation"</p> <p>J.ELECTROCHEM-SOC., vol. 146, no. 10, 1999, pages 3603-3605, XP009014798 * see p.3603, left col., last par. * the whole document</p>	1-32
Y	<p>WO 97 35349 A (BADWAL SUKHVINDER P S ; JAFFREY DON (AU); NEWMAN JOHN (AU); FOGER K) 25 September 1997 (1997-09-25) * see p.2, l.18-24, claims 1,2 and 11 * the whole document</p>	1-32

-/--

INTERNATIONAL SEARCH REPORT

International Application No

PCT/03/11639

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 656 387 A (BARNETT SCOTT ALEXANDER ET AL) 12 August 1997 (1997-08-12) * see col 1, l. 19-59, claim 1 * the whole document	1-32
Y	PARK, S. ET AL: "Direct Oxidation of hydrocarbons in a solid-oxide fuel cell" NATURE, vol. 404, 16 March 2000 (2000-03-16), pages 265-267, XP002249578 * see p.265, left col, penultimate par. * the whole document	1-32
Y	EP 0 588 536 A (CERAMATEC INC) 23 March 1994 (1994-03-23) * see p.3, l. 6-22, claims 1-7 * the whole document	1-32

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT 03/11639

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0052780	A	08-09-2000	US 6589680 B1	08-07-2003
			AU 747320 B2	16-05-2002
			AU 3395200 A	21-09-2000
			CA 2365857 A1	08-09-2000
			EP 1157438 A1	28-11-2001
			JP 2002538597 A	12-11-2002
			WO 0052780 A1	08-09-2000
			US 2003211381 A1	13-11-2003
			US 2001029231 A1	11-10-2001
			US 2001053471 A1	20-12-2001
WO 9735349	A	25-09-1997	AU 722708 B2	10-08-2000
			AU 6920496 A	10-10-1997
			WO 9735349 A1	25-09-1997
			DE 19681750 T0	25-03-1999
			GB 2326759 A , B	30-12-1998
			JP 2000506671 T	30-05-2000
			US 6280868 B1	28-08-2001
US 5656387	A	12-08-1997	NONE	
EP 0588536	A	23-03-1994	US 5340665 A	23-08-1994
			EP 0588536 A2	23-03-1994
			JP 6260169 A	16-09-1994